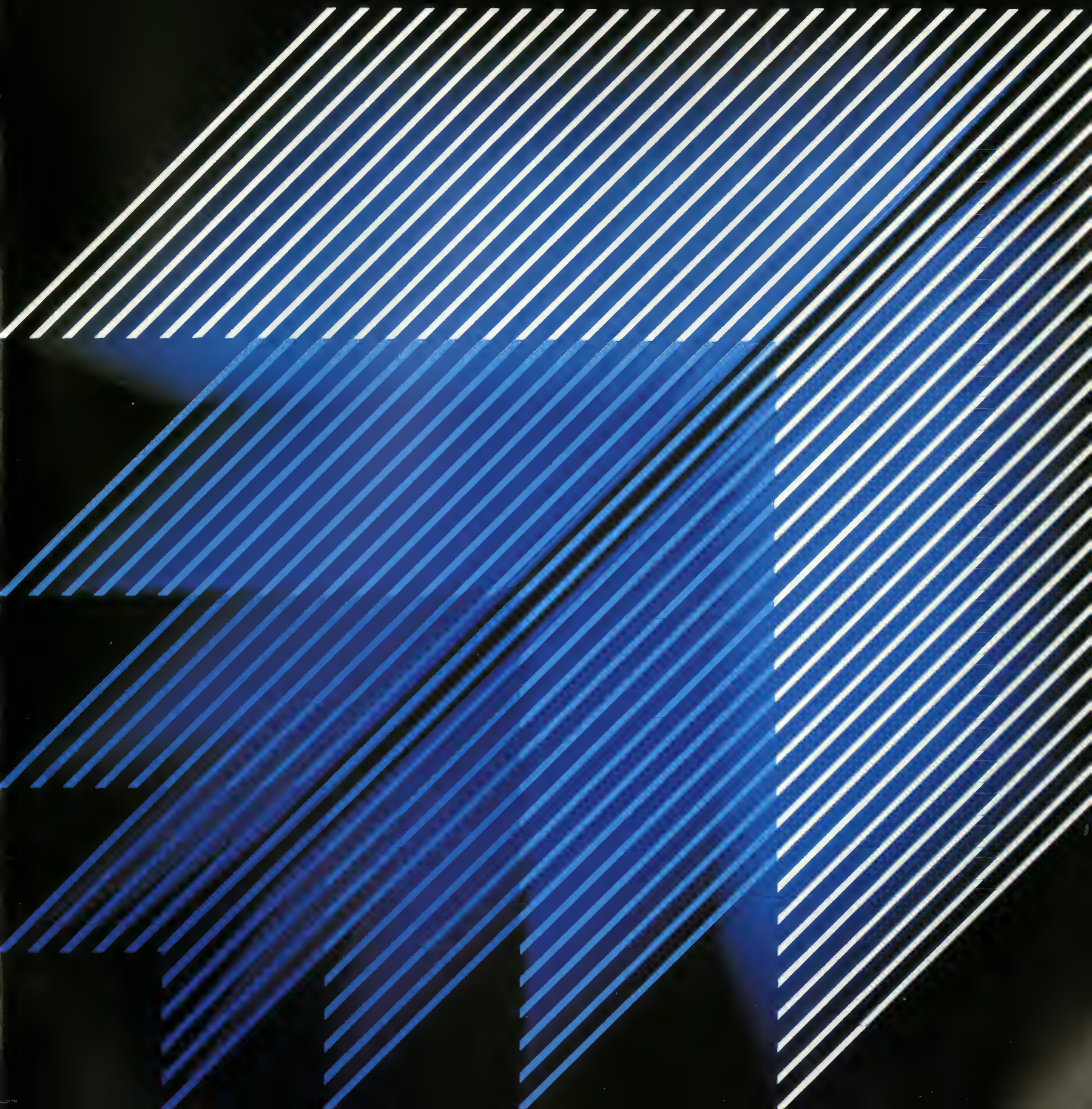# IBM

The IBM 4341 Processor

...opening a new chapter in intermediate computing

There's a new chapter opening up in intermediate computing because IBM now has a computer that was designed from the start to redefine "intermediate" computing . . . and put an end to some of its major growth constraints.

Surprisingly compact, yet more powerful than many larger systems, the new IBM 4341 Processor is designed to let you move into the arena of true big-system performance—at no more cost than you're probably paying now for a system with less growth capacity.

This is possible because the IBM 4341 —the larger of the new IBM 4300 Processors—departs boldly from the traditional growth "step" philosophy that has brought incremental capacity increases to intermediate users over the years.

In fact, the 4341 offers a "leap forward" in both processor performance and in main memory capacity, compared to that available on the System/370 Model 138, yet, it's compatible with System/370 and System/360 models to protect your investment in application development.

Consider the credentials of this compact, powerful performer: a virtual storage processor with System/370

compatibility . . . internal speeds that rival large-scale processors . . . one of the first systems from IBM with large scale integration (LSI) technology . . . up to four megabytes of main memory . . . new input/output units . . . and enhanced maintenance features aimed at improving the overall system reliability, availability and serviceability while helping to minimize the need for preventive maintenance.

Unprecedented growth opportunities
These are just some of the highlights
of the 4341. There are many more,
including extended versions of proven
operating systems, software sys-
tems with enhanced levels of function
and ease of use, and installation
aids to help get your system in pro-
ductive operation faster.

The 4341 presents a welcome opportu-
nity for intermediate users looking
for ways to grow—but caught in the
middle between smaller systems
that can't do enough and larger sys-
tems that can—only at a price be-
yond reach.

If you're a smaller System/370 user,
for example, or operating in the high
System/360 range, you'll find the
price/performance of the 4341 excep-
tionally attractive...as you will if
you want to add a system to your pres-
ent large 370 installation in order
to gain the advantages of multiple-
system operation. Similarly, if you
need additional computing capacity
but financial considerations stand
in your way, you'll want to consider
the 4341 as a complement to your
present system at low additional cost.

Whatever your present capacity and
financial position, you still have
legitimate growth goals. Perhaps you
want to add data base to your pres-
ent data communications environment.
Or expand interactive capabilities
to speed application development. Or
generally improve the productivity
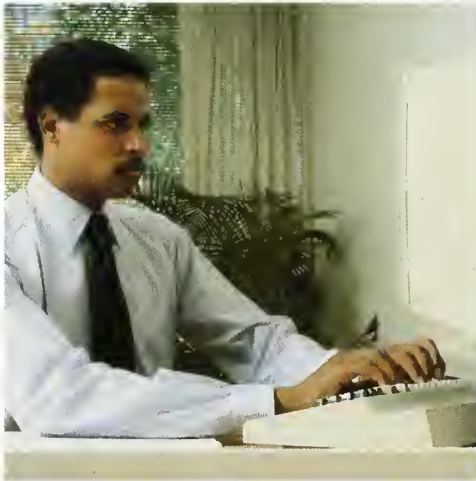of the data processing department and
your end users.

The point is that now you have the
chance to achieve any or all of your
objectives...at an outstanding level
of price/performance.

Extensive use of LSI
Underpinning the ability of the IBM
4341 to deliver true large-system
capability at intermediate-system cost
is the full use of high-density, large
scale integration (LSI) technology for
main memory and logic.

This innovation translates directly
into substantial savings for you...in
higher system reliability and avail-
ability...simplified maintenance...
and greatly reduced requirements
for power, air conditioning and physi-
cal space.

LSI also accounts for the increases
now available to you in internal per-
formance and memory size. The 4341's
internal speed, for example, ranges
up to 3.2 times faster than that of the
Model 138. And its main memory,
available in two or four megabytes,
provides up to four times the maxi-
mum amount available on the Model
138 and eight times the maximum IBM
memory on a System/360 Model 50.

High-speed buffer

The 4341 also incorporates a high-speed buffer, a feature previously available only in the largest IBM processors. This special 8K-byte buffer functions as a staging mechanism for instruction, execution and data references, thus making more productive use of processing time.

More advanced devices and features

New devices and features contribute to the IBM 4341 Processor's capability to get more work done faster and more economically. They include:

One standard byte multiplexer channel. Provides up to 256 subchannels for concurrent operation of low-speed devices, such as printers and card readers.

Up to five block multiplexer channels. Each of two standard channels provides a data transfer rate of two megabytes per second to accommodate a wide range of high-speed input/output devices. And as your work volumes grow, up to three more channels may be added, two having a data rate of two megabytes per second, and the third, one megabyte per second. A channel-to-channel adapter is also available to directly connect the 4341 to your present System/360 or System/370 or another IBM 4300 Processor.

New display console. The IBM 3278 Model 2A Display Console has a 1,920-character display and keyboard for fast, easy interaction with the system.

It incorporates all the functions ordinarily provided by a processor control panel, and it can also be used by the IBM Customer Engineer to display service information and execute IBM diagnostic routines. Additionally, three display consoles or 3287 Printers Model 1 or 2 in any combination may be attached to the system.

New DASD control unit. The new IBM 3880 Storage Control Facility provides two separate data paths into the central processor, resulting in improved balancing of working data sets and the potential for faster, more consistent response times to end users.

New DASD device. The IBM 3370 Direct Access Storage Device, a new high-performance device, allows you to store even more data base information online. A sealed unit, the 3370 stores 570 megabytes of information per drive—and has a transfer rate of 1.86 megabytes per second.

New printer. The new IBM 3203 Printer Model 5 features superior print quality and prints at speeds up to 1,200 lines per minute. It has a self-contained control unit and connects directly to the byte or block multiplexer channel.

Programming support

The 4300 Processors are supported by three operating systems—the new Disk Operating System/Virtual Storage Extended (DOS/VSE), Operating System/Virtual Storage 1 (OS/VS 1) and Virtual Machine Facility/370 (VM/370).

Standard features for improved performance

Two modes of operation will be supported on the 4341: Extended Control Program Support: Virtual Storage Extended (ECPS:VSE) mode and System/370 mode.

Through the implementation of new hardware and software capabilities, some DOS/VSE programs when run in ECPS:VSE mode can show a reduction in total processor time of up to 12 percent over the same programs run in System/370 mode.

When running in System/370 mode, two other performance improvement options are available to reduce the processor time needed to execute certain frequently used supervisor functions in OS/VS1 and VM/370.

Implemented through the use of the reloadable control storage, users of ECPS:VS1 may realize a reduction of up to 7 percent in CPU "busy" time; likewise, ECPS:VM users may be able to realize a reduction of up to 83 percent in CPU busy time.

The implementation of these features can mean improved performance for your installation and more processor time available for the implementation of new applications.

Easier to install

Thanks to its inherent compatibility with System/370, and augmented by a new, more productive installation aid, the IBM 4341 Processor can be installed smoothly and quickly. The new aid, called System Installation Productivity Option/Extended (System IPO/E),can reduce startup time for DOS/VSE and VM/370 users because it delivers the operating systems and key supporting software products pre-generated as a total system...as well as preconfigured and tuned to your specific hardware system and application software needs.

System IPO/E also helps to simplify system operation because it features an interactive subsystem that provides online prompting to help systems programmers, operators and end users select and complete their tasks.

Putting the 4341 to work

The new dimensions of 4341 capacity, price/performance and versatility are impressive. But the real question is: once the 4341 is installed, how will it relate to your current concerns —such as rising labor costs, declining rates of productivity improvement and escalating material prices?

The answer is that the 4341 now makes it more economical to move into data base/data communications (DB/DC) and interactive computing— areas with high application payback potential because they give you a better way to make more current and pertinent information readily accessible to those you depend on to run your business.

Data base/data communications support

With the 4341 Processor, you can now have a cost-attractive way to get quick, reliable and secure access to a growing data base...to provide the timely, accurate facts and figures that can both improve the efficiency of your system users...and provide the competitive edge in customer service you're looking for.

To help you implement your data base and data communications applications, IBM's proven products—the Customer Information Control System/Virtual Storage (CICS/VS) and Data Language/I (DL/I)—are available in the new System IPO/E package. Additionally, for users of VS1, Information Management System/Virtual Storage (IMS/VS) is available to implement your data base and data communications applications.

Interactive computing support

Interactive computing has always been a desirable goal for intermediate users, because it places the power of a single computer in the hands of many people at once. Now, interactive computing becomes more attractive and economically feasible because the tremendous performance improvements of the 4341 enable you to add VM/370 at low additional cost.

Easy to learn and use, the Conversational Monitor System (CMS) portion of VM/370 makes problem solving more practical and productive for both programmers and non-DP personnel. CMS time sharing capabilities can help you break the bind of growth constraints, because they can overcome operational limitations and help to get more work done faster, reduce programming time and costs and implement cost-saving applications sooner.

With its power and ability to run your 4341 as if it were two or more processors in one, VM/370 is particularly valuable if you have to convert from one IBM operating system to another. If you're presently a System/360 user, for example, you can make a smooth, phased conversion by running your existing System/360 applications programming on the 4341 at the same time you're developing and testing programs on the new system control programming for complete changeover to the new system.

If you're a larger System/370 user considering the addition of one or more 4341s to a network of multiple processors, you can readily accomplish this with a new program product called Remote Spooling Communications Subsystem Networking (RSCS Networking).

This program product, which runs under control of VM/370, allows for easy exchange of data, programs and messages between the 4341 and all other systems on the network.

Photographs show design models

New maintenance concept
The IBM 4341 Processor is not only easier to install and more productive to use...it's also capable of helping to maintain itself.

The 4341 can do this because it automatically analyzes its own failure symptoms and generates a "reference code" containing information that identifies the source of trouble. The code is simultaneously logged on the system diskette and displayed on the console to alert the operator. In most cases, error-correction procedures will automatically return the system to normal operation.

If a problem is sufficiently serious, your IBM Customer Engineer can make a teleprocessing connection to an IBM Remote Support Facility—via a separate support processor in the 4341 which can operate even when the system is not operational.
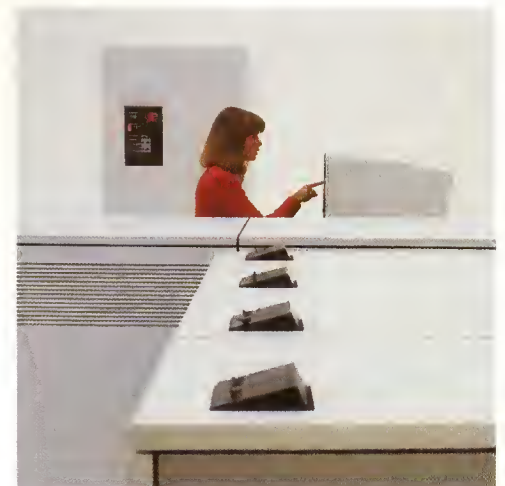
This gives the Customer Engineer direct access to the latest service information and to a team of IBM technical support specialists. If necessary, the specialists from this central location can examine the 4341 reference code ... execute diagnostic routines ... and even apply microcode problem fixes directly through the system diskette.

Remote yet responsive, this support can help to reduce system outages ... because it allows both you and IBM to detect and fix problem symptoms sooner. And, given the inherent reliability and serviceability of the LSI-based 4341, that means you can pare your maintenance needs down to an "exception only" basis.

The system with a future
From any perspective important to the intermediate user, the IBM 4341 is a system with a bright future. It gives you power and capacity to spare and room enough to grow in the directions of your choice...for years to come. At last, you can have an intermediate system that will let you stay in the middle of things, without getting caught there.

Contact your IBM Data Processing representative soon for the full story of the IBM 4341 Processor. You might decide it's a system that can help you write a new chapter of your own on intermediate computing.

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